REMARKS

This paper is filed in response to the final Office action mailed on July 29, 2008. In that Office action, claims 1-13 are rejected under 35 U.S.C. 103(a) as being purportedly obvious in view of prior art. In response to the Office action and in accordance with the discussion via telephonic interview on September 30, 2008, the claims have been amended to specify additional limitations and to further distinguish from the prior art, as discussed more specifically below. In light of the foregoing amendments and following remarks, applicants respectfully request reconsideration and allowance of all pending claims.

Claim Rejections – 35 U.S.C. 103

In the outstanding Office action, claims 1, 2 and 5-13 stand rejected as being unpatentable over U.S. Patent No. 5,696,737 ("Hossack") in view of U.S. Patent No. 5,721,710 ("Sallas"). To support an obviousness rejection, MPEP §2143.03 requires "all words of a claim to be considered" and MPEP §2141.02 requires consideration of the "[claimed] invention and prior art as a whole." Further, the Board of Patent Appeals and Interferences recently confirmed that a proper, post-KSR obviousness determination still requires the Office to make "a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art." *See, In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Applicants believe that each of the pending claims includes one or more elements that are not disclosed by the combination of Hossack and Sallas, thereby overcoming the obviousness rejection, as discussed more specifically below.

Independent claim 1, as well as claims 2-13 dependent thereon, specifies a method of determining impulse responses of a medium in relation to the transmission of waves between different points. Among other things, the method requires a step (a) of emitting waves into a medium by generating signals ei(t) on the basis of a number N of emission points included in the medium; a step (b) of receiving signals rj(t) from the emitted waves after transmission in the medium at a number M of reception points included in the medium; and a step (c) of determining the impulse responses hij(t) between each emission point i and reception point j on the basis of the emitted signal ei(t) and the received signal ei(t). Calculation of each impulse response hij(t) is performed on the basis of a signal of correlation between the signal emitted ei(t)

at an emission point i and the signal received rj(t) at a reception point j. As currently amended, claim 1 further requires the signals ei(t) to be orthogonal to one another, or orthogonally coded, such that the information specific to each emission point i may thereafter be separated from the other information in the signals picked up rj(t). Furthermore, claim 1 has been amended to specifically require each signal ei(t) to have different frequencies $f_{0,i}$ for the N emission points. Support for the same is found in paragraphs [0036] and [0042] of the specification of the present application. No new matter has been added.

Hossack discloses a transmit beamformer with multiple transducers that generate transmit waveforms consisting of multiple frequency components. The Examiner asserts that Hossack discloses the claimed course of step (a) of simultaneously emitting signals ei(t) wherein each signal ei(t) is a sum of n substantially monochromatic elementary signals of like amplitude and of respective frequencies $f_{0,i}+k.\delta f$, as specified in the pending claims. However, the waveforms of Hossack are not simultaneously emitted but rather individually delayed. In particular, column 4, lines 31-64 of Hossack discloses a process for specifically calculating delays that "is repeated for all transducers and all frequency components (and associated focal ranges) of interest." Furthermore, as discussed during the telephonic interview, Hossack lacks orthogonally coded signals, and therefore, also lacks signals having different frequencies for the N different emission points. For instance, the method of the present application emits signals e1(t), e2(t), ... eN(t), wherein the frequencies of the signals are distinct, namely $f_{0,1}$, $f_{0,2}$, ... $f_{0,N}$, respectively. Within each emitted signal, for example e1(t), is a sum of n elementary signals having respective frequencies, such as $f_{0,1}$, $f_{0,1} + \delta f$, $f_{0,1} + 2\delta f$, ... $f_{0,1} + n\delta f$. Similarly, signal e2(t) is a sum of elementary signals having respective frequencies of $f_{0,2}$, $f_{0,2} + \delta f$, $f_{0,2} + 2\delta f$, ... $f_{0,2} + n\delta f$. As shown in Fig. 7 and column 5, lines 24-45, Hossack simply discloses waveforms h_0, h_{31}, h_{63}, h_{95}, and h_{127} which are delayed and shaped according to a range of focus. The Examiner asserts that the signals of Hossack emitted at 3, 5 and 7 MHz can be considered to have respective frequencies of $f_{0,i}+k.\delta f$ as specified in the pending claims. However, Hossack then still fails to disclose the N emission points from which signals e1(t), e2(t), ... eN(t) are emitted with different and distinct frequencies of $f_{0,1}$, $f_{0,2}$, ... $f_{0,N}$, respectively.

The Examiner asserts that Hossack discloses all of the limitations of independent claim 1, except for a step of calculating impulse responses from emitted and received waves, and subsequently relies on Sallas to supply this deficiency of Hossack. However, as previously discussed, Hossack also fails to disclose simultaneous emission of orthogonally coded signals ei(t) from N emission points wherein the frequency $f_{0,i}$ for each signal is different for the N emission points. Sallas discloses a method of generating seismic surveys based on source and geophone vibrations. Nothing in Sallas discloses orthogonally coded or simultaneously emitted signals that have distinct frequencies over several emission points, as currently claimed. As Sallas fails to supply all of the deficiencies of Hossack and while the combination of Hossack with Sallas fails to disclose each and every element of the pending claims at issue, applicants respectfully submit that the obviousness rejection must fail and should be withdrawn.

In the outstanding Office action, dependent claims 3 and 4 stand rejected as being unpatentable over Hossack in view of Sallas, and further in view of the IEEE July 1976 publication titled "Precise Impulse Response Measurement of SAW Filters" ("Panasik"). However, the subject matter of independent claim 1 is not made obvious by the combination of Hossack and Sallas, and Panasik still fails to supply the deficiencies of the combination of Hossack and Sallas. Moreover, Panasik does not disclose steps of emitting orthogonally coded signals simultaneously having distinct frequencies over N emission points as claimed in claim 1, and therefore, the combination of Hossack, Sallas and Panasik does not render claims 3 and 4 obvious. Applicants respectfully submit that the obviousness rejection of those claims must also fail and should be withdrawn.

CONCLUSION

In light of the foregoing, applicants respectfully submit that each of the currently pending claims, i.e. claims 1-13, are in a condition for allowance and respectfully solicit the same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned agent. The undersigned verifies that he is authorized to act on behalf of the assignee of the present application.

Dated: November 17, 2008

Respectfully submitted,

By_____

Robin S. O
Registration No.: 60,043
MILLER, MATTHIAS & HULL
One North Franklin Street
Suite 2350
Chicago, Illinois 60606
(312) 235-4763
Agent for Applicant